CLAIMS

1. A method for analyzing interactions, comprising the steps of:

introducing into a separation channel a first solution comprising a substance to be analyzed that is eluted from the separation channel faster, and a second solution comprising a substance to be analyzed that is eluted from the separation channel more slowly, wherein at least a portion of the first solution is introduced into the separation channel after introducing at least a portion of the second solution thereinto; and

detecting a chromatogram of the substances eluted from the separation channel.

2. The method for analyzing interactions according to claim 1, further comprising the step of comparing the detected chromatogram with a chromatogram of the substance comprised in the first solution and/or the substance comprised in the second solution without any interaction with other substances to be analyzed; and

wherein a determination that there exists an interaction between the substance comprised in the first solution and the substance comprised in the second solution is made, when there is a difference between the chromatograms.

3. The method for analyzing interactions according to claim 1, wherein the separation channel is composed of at least one chromatography selected from the group consisting of size exclusion chromatography, ion exchange chromatography, affinity chromatography, adsorption chromatography, hydrophobic chromatography, hydroxyapatite chromatography, metal chelate chromatography, an electrophoresis tube and an electroosmotic flow tube.

4. The method for analyzing interactions according to claim 1, wherein the chromatogram is detected by at least one detector selected from the group consisting of a mass spectrometry detector, a spectroscopy detector, a UV detector, a fluorescence detector, a luminescence detector, a refraction detector, and an electrochemical detector.

5. The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution comprise a plurality of substances to be analyzed.

6. The method for analyzing interactions according to claim 1, wherein the chromatogram is a mass chromatogram detected based on the mass of a substance to be analyzed comprised in the first solution and/or the second solution.

7. The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution comprise a plurality of substances to be analyzed, and a multiplex chromatogram of the plurality of the substances are detected.

8. The method for analyzing interactions according to claim 1, wherein the first solution and the second solution are introduced into the separation channel in different amounts.

9. The method for analyzing interactions according to claim 1, wherein the second solution is introduced into the separation channel in an amount twice or more the amount of the first solution.

10. The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at least a portion of the second solution thereinto comprises introducing a gaseous or liquid spatial sample after the introduction of the second solution and before the introduction of the first solution.

11. The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution consist of a plurality of solution samples, and the plurality of solution samples are introduced continuously.

12. The method for analyzing interactions according to claim 1, wherein

the separation channel consists of n stages ($n \geq 2$, integer), and a step of introducing a fraction eluted from an $(m-1)^{th}$ stage ($2 \leq m \leq n$, integer) of the separation channel into an m^{th} stage of the separation channel is repeated from $m = 2$ until $m = n$, and

the step of detecting a chromatogram comprises detecting a chromatogram of a substance to be analyzed eluted from an n^{th} stage of the separation channel.

13. The method for analyzing interactions according to claim 12, wherein

when the fraction eluted from the $(m-1)^{th}$ stage of the separation channel contains the substance comprised in the first solution, the fraction is introduced into the m^{th} stage of the separation channel after the introduction of the second solution, and

when the fraction eluted from the $(m-1)^{th}$ stage of the separation channel contains the substance comprised in the second solution, the fraction is introduced into the m^{th} stage of the separation channel before the introduction of the first solution.

14. The method for analyzing interactions according to claim 12, wherein

when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the m^{th} stage of the separation channel during the second solution is introduced into the m^{th} stage of the separation channel at predetermined intervals, and

when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain the substance comprised in the second solution, the fractions are introduced into the m^{th} stage of the separation channel during the first solution is introduced into the m^{th} stage of the separation channel at predetermined intervals.

15. The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at least a portion of the second solution thereinto comprises introducing the first solution and the second solution in an amount of 10 μL or less respectively.

16. The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at least a portion of the second solution thereinto comprises introducing the first solution and the second solution into an amount of 3 μL or less respectively.

17. An apparatus for analyzing interactions, wherein the apparatus comprises:

a separation device which has a separation channel to separate and elute substances comprised in a solution;

a container section which has first solutions comprising substances that are eluted from the separation channel faster and second solutions comprising substances that are eluted from the separation channel more slowly;

an introduction device to introduce at least a portion of the first solution from the container section into the separation channel after introducing at least a portion of the second solution thereinto; and

a control device to control operation of at least the introduction device,

wherein the control device controls the introduction device to introduce the second solution and the first solution into the separation channel in this order.

18. The apparatus for analyzing interactions according to claim 17, wherein the apparatus further comprises a detection device to detect chromatograms of the substances eluted from the separation channel.

19. The apparatus for analyzing interactions according to claim 17, wherein the separation device has at least one chromatography selected from the group consisting of a size exclusion chromatography, an ion exchange chromatography, an affinity chromatography, an adsorption chromatography, a hydrophobic chromatography, a hydroxyapatite chromatography, a metal chelate chromatography, an electrophoresis tube device, and an electroosmotic flow tube device.

20. The apparatus for analyzing interactions according to claim 18, wherein the detection device is at least one detector selected from the group consisting of a mass spectrometry detector, a spectroscopy detector, a UV detector, a fluorescence detector, a luminescence detector, a refraction detector, and an electrochemical detector.

21. The apparatus for analyzing interactions according to claim 17, wherein the control device controls the introduction device to introduce a gaseous or liquid spatial sample after the introduction of the second solution and before the introduction of the first solution.

22. The apparatus for analyzing interactions according to claim 17, wherein the container section has a plurality of first solutions and/or a plurality of second solutions.

23. The apparatus for analyzing interactions according to claim 17, wherein

the separation device comprises separation channels consisting of n stages ($n \geq 2$, integer), and

the control device controls the introduction device so that a step of introducing fractions eluted from an $(m-1)^{th}$ stage ($2 \leq m \leq n$, integer) of the separation channel into an m^{th} stage of the separation channel is repeated from $m = 2$ until $m = n$.

24. The apparatus for analyzing interactions according to claim 23, wherein the control device controls the introduction device so that when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the m^{th} stage of the separation channel after the introduction of the second solution, and when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain

the substance comprised in the second solution, the fractions are introduced into the m^{th} stage of the separation channel before the introduction of the first solution.

25. The apparatus for analyzing interactions according to claim 23, wherein the control device controls the introduction device so that when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the m^{th} stage of the separation channel during the second solution is introduced into the m^{th} stage of the separation channel at predetermined intervals, and

when the fractions eluted from the $(m-1)^{th}$ stage of the separation channel contain the substance comprised in the second solution, the fractions are introduced into the m^{th} stage of the separation channel during the first solution is introduced into the m^{th} stage of the separation channel at predetermined intervals.

26. The apparatus for analyzing interactions according to claim 17, wherein the first solution and the second solution are introduced into an amount of 10 μL or less respectively.

27. The apparatus for analyzing interactions according to claim 17, wherein the first solution and the second solution are introduced into an amount of 3 μL or less respectively.